

-44-

**WHAT IS CLAIMED IS:**

1. A method of imaging a tubular body structure having a lumen defined by a wall, comprising:

5 providing a data set containing data representing a plurality of cross-sectional images of a tubular structure of the body taken along a longitudinal axis of the tubular body;

processing the data set to reconstruct a three-dimensional image of the tubular body;

10 identifying a central pathway through a lumen of the three-dimensional image;

selecting a starting point along the central pathway;

processing the data beginning at the starting point and continuing along the longitudinal length of the three-dimensional image of the colon and rendering a flattened view of the three-dimensional image;

15 storing data representing the flattened view in an image buffer;

displaying the flattened view of the image.

2. The method of claim 1, further comprising:

selecting a point along the central pathway;

-45-

processing the data at the selected point and rendering an image of a cross-section of the wall of the tubular structure at the selected point; and

displaying the image of the cross-section of the wall of the tubular structure.

3. The method of claim 1, wherein processing the data and rendering the  
5 flattened image comprises:

projecting a ray from the starting point to the wall, the direction of the ray corresponding to an angle of view; and

adding a voxel value to an image buffer.

4. The method of claim 3, further comprising:

10 shifting the angle of view by one degree;

projecting another ray from the starting point to the wall, the direction of the ray corresponding to the shifted angle of view if the angle of view has not been shifted a total of 360 degrees from the initial starting point.

5. The method of claim 4, further comprising:

15 advancing the starting point along the longitudinal axis of the lumen by a selected value if the angle of view has been shifted a total of 360 degrees from the initial starting point;

repeating the steps of projecting the ray and storing voxel values in an image buffer until the entire length of the lumen has been processed.

-46-

6. The method of claim 4, wherein the tubular structure is a colon.

7. A method for generating a view of the interior of a wall of tubular structure of a body including tissue adjacent the exterior of the wall, comprising the steps of:

- 5       (a) providing a data set containing data representing a three-dimensional volume representing a tubular structure of the body taken along a longitudinal axis of the tubular body, the tubular body having a lumen defined by a wall;
- (b) selecting a starting point along a central pathway disposed along the longitudinal axis of the tubular body;
- 10       (c) projecting a ray towards the wall a selected distance by stepping towards the wall along the ray from the starting point;
- (d) calculating a voxel value at the location of each step of the ray;
- (e) adding the voxel value to an image buffer;
- (f) incrementing the angular projection of the ray one degree;
- 15       (g) determining if the angular projection of the ray has been incremented 360 degrees since the starting point was selected;
- (h) projecting a ray having the incremented angulation toward the wall;
- (i) repeating steps (d) through (h) until the angular projection of the ray has been incremented 360 degrees; and

-47-

(j) displaying a subsurface volume image.

8. The method of claim 7, wherein the tubular structure is in a colon.

9. The method of claim 1, further comprising:

5 comparing the three-dimensional volume data set to a library of geometrical patterns representative of predetermined abnormalities;

identifying a structure contained in the three-dimensional volume data set as abnormal if the structure is determined to match at least one of the library of geometrical patterns within a predetermined tolerance.

10. The method of claim 7, further comprising:

10 comparing the three-dimensional volume data set to a library of geometrical patterns representative of predetermined abnormalities;

identifying a structure contained in the three-dimensional volume data set as abnormal if the structure is determined to match at least one of the library of geometrical patterns within a predetermined tolerance.

15 11. The method of claim 9, further comprising:

further processing the identified abnormal structure to determine if the identified structure is not abnormal.

12. The method of claim 10, further comprising:

-48-

further processing the identified abnormal structure to determine if the identified structure is not abnormal.

13. A system for displaying views of data generated during a scan of a body portion of a patient, comprising:

5 a memory for storing scan data;

a processor capable of being programmed to analyze scan data, the processor in operable communication with the memory and configured to manipulate data in the memory to render a flattened view of a three-dimensional volume; and

a display for displaying the flattened view.

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